

ICHTHYOLOGY.—*The flatfish Cyclopsetta chittendeni* Bean from Texas, a new record for the fauna of North America.<sup>1</sup> EARL D. REID, U. S. National Museum. (Communicated by LEONARD P. SCHULTZ.)

A collection of marine and fresh-water fishes from the vicinity of Galveston, Tex., presented to the United States National Museum by J. L. Baughman, of Houston, contained two examples of the rare flounder *Cyclopsetta chittendeni* B. A. Bean<sup>2</sup> collected by the donor on August 11, 1940, near Galveston. Heretofore this species was known only from five specimens from the vicinity of the Island of Trinidad. The Galveston specimens are much smaller than those from Trinidad, being 83 and 91 mm respectively, in standard length. The type, U.S.N.M. no. 44100, is 172 mm while the remaining four examples are 205 to 230 mm in total length, according to J. R. Norman.<sup>3</sup>

The following counts were made: Dorsal rays, 87 and 89; anal rays, 66 and 69; pectoral 15, lateral line 78 and 80; gill rakers 4+8 on first gill arch.

ENTOMOLOGY.—*A revision of the parasitic wasps of the genus Necremnus Thomson (Eulophidae; Hymenoptera).*<sup>4</sup> A. B. GAHAN, U. S. Bureau of Entomology and Plant Quarantine. (Communicated by C. F. W. MUESEBECK.)

The genus *Necremnus* contains some species that are parasitic upon insects of economic importance. Eight species, of which four are believed to be new, are treated in the accompanying key.

Family EULOPHIDAE  
Genus **Necremnus** Thomson

This genus was said by Thomson to have only one spur on the hind tibia, and Ashmead, in his *Classification of the chalcid-flies* (Mem. Carnegie Mus. 1: 358. 1904), placed it in the tribe Hemiptarsenini, which he distinguished from the tribe Eulophini on the basis of this character. The genotype species, *leucarthros* (Nees), however, has two tibial spurs (one very short and difficult to distinguish), and in the other species two very unequal spurs are discernible on all specimens in which the hind tibiae are in proper position for observation.

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution. Received March 25, 1941.

<sup>2</sup> Proc. U. S. Nat. Mus. 17: 635-636, fig. 3. 1895.

<sup>3</sup> *A systematic monograph of the flatfishes (Heterosomata)* 1: 136-137, fig. 89. British Museum, London, 1934.

<sup>4</sup> Received February 25, 1941.

Antenna inserted well below middle of head, not compressed; 9-jointed in the female (scape, pedicel, one distinct ring joint, 3-jointed funicle, and 3-jointed club), apparently 8-jointed in the male (scape, pedicel, apparently without a ring joint, funicle 4-jointed, and club 2-jointed, the first three funicular joints usually each with a branch, or, if unbranched, the scape much enlarged); pronotum short, conical; mesoscutum without parapsidal grooves; scutellum with two pairs of strong setae and without either longitudinal grooves or a transverse furrow; propodeum usually with a median carina but without distinct lateral folds and without well defined spiracular sulci, the spiracles located close to base of propodeum. Wings well developed; submarginal vein not broken; marginal vein shorter than submarginal and two or more times as long as stigmal vein; postmarginal vein at least as long as stigmal, usually distinctly longer. Abdomen subsessile, more or less ovate in outline; only the apex of ovipositor visible.

## KEY TO THE SPECIES OF NECREMNUS

1. Funicular joints without rami, scape never much enlarged. Females . . . 2  
    Funicular joints 1 to 3 each with a distinct ramus, or, if without rami,  
    then scape greatly enlarged. Males . . . . . 9
2. Forewing distinctly marked with fuscous . . . . . 3  
    Forewing without fuscous markings . . . . . 5
3. Forewing with a large fuscous cloud across middle enclosing a hyaline  
    area adjacent to marginal vein and with three fuscous spots near  
    apical margin; second funicular joint testaceous, rest of flagellum  
    blackish . . . . . *maculatipennis* Ashmead  
    Infuscation of forewing not as above; second funicular joint concolorous  
    with rest of flagellum . . . . . 4
4. Forewing with a large fuscous cloud embracing whole area behind mar-  
    ginal vein; first funicular joint and pedicel subequal . . . . .  
    . . . . . *californicus* (Girault)  
    Forewing with a narrow fuscous spot or incomplete transverse band from  
    stigmal vein and a less distinct fuscous band behind base of marginal  
    vein; first funicular joint nearly twice as long as pedicel . . . . .  
    . . . . . *comptus*, n. sp.
5. Bright metallic green . . . . . 6  
    Dark or blackish green, mesoscutum and scutellum sometimes with a  
    coppery tinge . . . . . 7
6. Propodeum very weakly sculptured medially and usually with at least  
    slight traces of lateral folds behind middle . . . . . *breviramulus*, n. sp.  
    Propodeum distinctly though delicately sculptured medially as well as  
    elsewhere and without traces of lateral folds . . . . . *oregonensis*, n. sp.
7. Postmarginal vein not longer than stigmal vein . . . . . *punctifrons* Thomson  
    Postmarginal vein distinctly longer than stigmal vein . . . . . 8
8. Abdomen about twice as long as broad; marginal vein fuscous or brown-  
    ish testaceous . . . . . *leucarthros* (Nees)  
    Abdomen about one and one-half times as long as broad; marginal vein  
    pale yellowish . . . . . *duplicatus*, n. sp.
9. Funicular joints without rami; scape greatly enlarged; second funicular  
    joint testaceous, rest of flagellum blackish; wings maculated with  
    fuscous . . . . . *maculatipennis* Ashmead

- Funicular joints 1 to 3 with distinct rami; scape usually only slightly broadened; second joint of funicle not differently colored from the others; wings hyaline. . . . . 10
10. Rami of funicular joints short, not more than three times as long as the segments from which they originate and never extending nearly to apex of club. . . . . 11
- Rami of funicular joints long, four or more times as long as the segments from which they originate and all extending to apex of club or nearly so. . . . . 12
11. Rami of funicle very short, not twice as long as supporting segments and much less than half as long as flagellum. . . . . *breviramulus*, n. sp.
- Rami of funicle about two and one-half to three times as long as supporting segments, the longest approximately half as long as flagellum. . . . . *oregonensis*, n. sp.
12. Rami of funicle slender, cylindrical, and clothed with long, slender hairs. . . . . 13
- Rami of funicle more or less compressed, nearly as thick as funicular joints, and without long slender hairs, but rather densely clothed with short coarse and more or less recumbent hairs. . . . . *leucarthros* (Nees)
13. Postmarginal vein not longer than stigmal. . . . . *punctifrons* Thomson
- Postmarginal vein distinctly longer than stigmal. . . . . *duplicatus*, n. sp.

#### **Necremnus maculatipennis** Ashmead

*Necremnus maculatipennis* Ashmead, Fauna Hawaïensis 1: 331. 1901.

This species, described from Hawaii, is represented in the U. S. National Museum by the male and female types. The male differs from typical *Necremnus* by having the antennal scape greatly enlarged and compressed and the joints of the funicle entirely without rami. The female appears to be typical of the genus and the male differs in no way, except in the antennae.

In both sexes the front wing has a large fuscous cloud in the disk enclosing a hyaline area adjacent to the marginal vein, and there are also three fuscous spots near the apical margin. The second funicular joint is testaceous, the rest of the flagellum black.

#### **Necremnus californicus** (Girault), n. comb.

*Eulophus californicus* Girault, Proc. U. S. Nat. Mus. 53: 446. 1917.

The type of this species lacks the head, abdomen, and wings. The head and wings are mounted on a slide, the head crushed beneath the cover glass.

It may be distinguished from the other species treated herein by the large discoidal cloud covering the whole width of the wing behind the marginal vein. The scape is cylindrical, the pedicel more than twice as long as broad. The single ring joint is about half as long as broad. The first funicular joint is very slightly longer than the pedicel and about twice as long as broad at apex, the second joint a little longer than broad and the third subquadrate. The club is a little longer than the two preceding joints combined and very slightly broader than the last funicular joint. The propodeum is practically smooth, the median carina barely indicated, and the lateral folds and spiracular sulci are entirely absent.

#### **Necremnus comptus**, n. sp.

The bimaculate forewing, relatively long and pointed abdomen, and the mostly yellow hind tibia will distinguish this species from all others known to me.



*Female*.—Length 2.6 mm. Head as broad as thorax and nearly uniformly strongly reticulate-punctate; ocelli in a low triangle; lateral ocellus about twice its own diameter from eye margin; eyes with short pile; antennae inserted very slightly below a line connecting lower extremities of eyes, 9-jointed; scape subcylindrical, reaching to front ocellus, about five times as long as broad; pedicel about twice as long as broad; ring joint transverse; first funicular joint nearly twice as long as pedicel and about two and one-half times as long as broad; second and third funicular joints equal and each about twice as long as broad; club distinctly 3-jointed, no thicker than funicle, about equal in length to two preceding joints combined, the basal joint longer than broad, second joint subquadrate, apical joint conical, a little shorter than penultimate and terminating in a short spine. Thorax strongly reticulate punctate, the punctures on scutellum and axillae a little finer than those on mesoscutum; prepectus more coarsely sculptured than rest of pleuron; postscutellum about as long as propodeum and sculptured like scutellum; propodeum with very distinct and nearly uniform, fine, reticulate-punctate sculpture, with a distinct median carina and with traces of both lateral folds and spiracular sulci but these not distinctly impressed. Forewing extending about to apex of abdomen, its length to breadth about as 24 to 9; marginal, postmarginal, and stigmal veins approximately in the proportion of 25, 15, and 10, respectively. Abdomen longer than head and thorax combined, a little narrower than thorax, and fully three times as long as broad, the basal tergite smooth, the other tergites more or less sculptured; tip of ovipositor sheaths protruding a little beyond apex of abdomen.

General color greenish black; head below antennae, front coxae, mesosternum, and dorsum of abdomen tinged with coppery; propodeum metallic green; antennae entirely black; mandibles testaceous; coxae, trochanters, and femora black; tibiae yellow, the middle and posterior pairs with a little more than the apical one-third black; tarsi yellowish, the last two or three segments of each more or less fuscous; forewing subhyaline with a weak fuscous band at base of marginal vein and another incomplete one below stigmal vein; venation dark testaceous; hind wing hyaline.

*Type locality*.—San Francisco, Calif.

*Type*.—U.S.N.M. no. 54701.

Described from one female collected May 13, 1915, by E. P. Van Duzee.

#### *Necremnus breviramulus*, n. sp.

The male of this species is easily distinguished from other known males of the genus by the very short rami of the funicular joints. These branches are subequal and each less than twice the length of the main body of the segment from which it originates. The female differs from *maculatipennis* Ashmead and *californicus* (Girault) by having the forewings without infuscation, and it may be distinguished from *leucarthros* (Nees) by the much brighter metallic-green color of the body, by the somewhat shorter antennae, and by the less extensive infuscation of the posterior tarsi.

*Female*.—Length 2.2 mm. Head transverse, about as wide as thorax; lateral ocellus about twice its own diameter from eye margin; eyes with a few very short cilia; antennae inserted on or very slightly below a line joining the lower margins of the eyes, 9-jointed; scape subcylindrical, not attaining level of vertex; pedicel about one and one-half times as long as broad at apex; ring joint transverse, distinct; first funicular joint subequal in length to pedicel but slightly thicker; second and third joints of funicle each about as long as broad and very slightly shorter than first; club distinctly 3-jointed

and a little longer than the two preceding funicle joints combined, terminating in a distinct short spine. Whole head with fine, shallow, reticulate-punctate sculpture. Thorax sculptured about like the head; postscutellum about two-thirds as long as propodeum and sculptured like scutellum; propodeum with a distinct though delicate median longitudinal carina, without complete lateral folds but usually with distinct traces of them posteriorly, without spiracular sulci, and with its surface delicately reticulated, this sculpture very weak medially; prepectus distinctly more coarsely sculptured than rest of pleuron, the mesepimeron mostly smooth. Forewing extending beyond apex of abdomen, its length to breadth about as 22:9; marginal, postmarginal, and stigmal veins in about the proportions of 22, 10, and 7, respectively. Abdomen ovate, about twice as long as broad and about as long as head and thorax combined, nearly smooth but with some weak lineolation on the last three or four tergites; only the tip of ovipositor sheath exerted.

Head, thorax, and abdomen brilliant metallic green; antennal flagellum brownish; scape and pedicel metallic green; mandibles yellowish; legs metallic green or metallic fuscous, but with all trochanters, apices of all femora, anterior tibiae except ventrally, and middle and posterior tibiae at bases and apices pale yellow or whitish; each tarsus usually with the two basal joints white, the two apical joints fuscous; wings hyaline; venation pale yellowish; tegulae metallic green; abdomen beneath less brilliantly metallic than above.

*Male*.—Length 1.6 mm. Antennal scape slightly thickened, about two and one-half times as long as broad; pedicel only a little longer than broad; ring joint apparently obsolete; first three joints of flagellum each about as broad as long and each with a short thick ramus originating at its base and extending beyond its apex approximately to apex of following segment; fourth flagellar joint about one and one-half times as long as thick, distinctly separated from the preceding and the following joints by short petioles and without a ramus; fifth and sixth flagellar joints separated only by a distinct groove, together forming a club which is approximately one and one-half times as long as the fourth flagellar joint and slightly constricted at apex but without the distinct terminal spine which is present in the female. The abdomen is about as long as the thorax. In other respects the male is like the female.

*Type locality*.—Lawrence, Kans.

*Type*.—U.S.N.M. no. 54702.

Described from 31 females (1 holotype) and 8 males (1 allotype) said to have been reared from pupae of *Hypera eximius* Lec., June 6, 1936, by L. S. Henderson. The holotype, allotype, and 18 paratypes are deposited in the U. S. National Museum. Fifteen female and 4 male paratypes have been returned to the University of Kansas, whence the material was originally received.

Two females and 1 male reared at Pegrin, Ill., in October 1905 from *Hypera comptus* (Say) by E. S. G. Titus are in the U. S. National Museum collection and are almost certainly this species but are not considered a part of the type material.

#### ***Necremnus oregonensis*, n. sp.**

*Necremnus* sp. Chamberlin, Proc. Ent. Soc. Washington 35: 107. 1933.

In color, size, and most every other respect, this species agrees with the description of *breviramulus*, but it differs from that species in the following particulars: Antenna of male with branches of funicular joints each about two and one-half to three times as long as the segment from which they orig-

inate and always extending well beyond the apex of the segment which follows; fourth flagellar joint of male more than twice as long as broad; first funicular joint of female distinctly a little longer than pedicel and about twice as long as broad; propodeum in both sexes with nearly uniform, distinct, fine, reticulate-punctate sculpture and without definite traces of the lateral folds.

*Type locality*.—Richmond, Oreg.

*Type*.—U.S.N.M. no. 54703.

Described from 5 females (1 holotype) and 2 males (1 allotype) reared in July 1930 and June 1931 from *Hypera rumicis* (L.) by T. R. Chamberlin; also 2 females and 5 males reared July 5, 1931, by Chamberlin from material of *Hypera* sp. collected in the type locality.

#### ***Necremnus punctifrons* Thomson**

*Necremnus punctifrons* Thomson, Hym. Scand. 5: 235. 1878.

According to the description, this European species has the postmarginal vein not longer than the stigmal, in which respect it differs from all the other species here treated. It is not known to occur in America and has not been seen by the writer.

#### ***Necremnus leucarthros* (Nees)**

*Eulophus leucarthros* Nees, Hym. Ichneumon. affin. Mongr. 2: 172. 1834.

*Eulophus hippias* Walker, Mongr. Chalcid. 1: 185. 1839.

*Eulophus amempsimus* Walker, Mongr. Chalcid. 1: 186. 1839; Dalla Torre, Cat. Hym. 5: 58. 1878; Thorpe, Proc. Ent. Soc. London 5 (pt. 2): 30. 1930; Donisthorpe, Ent. Rec. and Journ. Variation 50: 74. 1938. (New synonymy.)

*Necremnus leucarthros* (Nees) Thomson, Hym. Scand. 5: 234. 1878; Dalla Torre, Cat. Hym. 5: 7. 1898; Ruschka and Fulmek, Zeitsch. Angew. Ent. 2: 398. 1915; Graham-Smith, Parasitology 11: 371–383. 1919; Chamberlin, Journ. Econ. Ent. 17: 629. 1924; Proc. Ent. Soc. Washington 27: 142. 1925.

The type of *Eulophus leucarthros* Nees has not been seen by the writer, the present interpretation of the species being based on specimens identified by Thomson, Ruschka, and Schmiedeknecht. *Eulophus hippias* Walker was placed by Thomson as a questionable synonym of *leucarthros*. The type of *hippias* in the British Museum was studied in 1927 and found to be the same as the current interpretation of *leucarthros*. On the same occasion the types of *Eulophus amempsimus* Walker were examined, and that species is also believed to be the same as *leucarthros*.

*Necremnus leucarthros* was reared at the Salt Lake, Utah, Laboratory of the Bureau of Entomology from material imported from Europe in connection with the introduction of parasites for control of the alfalfa weevil, *Hypera variabilis* (Hbst.), but is not known to have been released in this country. The species is recorded by Ruschka and Fulmek as parasitizing *Lema cyanella* (L.) and by Graham-Smith as attacking Diptera. Thorpe records *Eulophus amempsimus* from *Hyponomeuta padellus* (L.) and Donisthorpe cites it as a parasite of *Quedius brevis* Er.

#### ***Necremnus duplicatus*, n. sp.**

This species is extremely like *leucarthros* but may be distinguished in the male by the fact that the rami of the funicle joints are slender, cylindrical,



and sparsely clothed with long hairs. The female is not easily distinguished from *leucarthros*, differing, so far as I can see, only by being somewhat more robust, by having the abdomen broader in proportion to its length, and by the marginal vein being pale yellowish instead of brownish fuscous. The male antenna agrees with Thomson's characterization of *punctifrons*, but the postmarginal vein in that species is stated to be not longer than the stigmal, whereas in this species it is nearly one and one-half times as long as the stigmal.

*Female*.—Length 2.15 mm. Head transverse, about as wide as thorax, viewed from in front a little broader than high; ocelli in a low triangle; lateral ocellus about twice its own diameter from eye margin; eyes with sparse short pile; antennae inserted very slightly above a line connecting lower margins of eyes, 9-jointed; scape subcylindrical, slightly compressed, attaining to level of anterior ocellus; pedicel not quite twice as long as broad, shorter and narrower than first funicular joint; ring joint strongly transverse; first funicular joint fully twice as long as broad; second and third joints of funicle subequal, each distinctly longer than broad but a little shorter than first; club very distinctly 3-jointed, about as long as two preceding joints combined and scarcely thicker than funicle, the first two joints subequal, the third joint smaller and terminating in a short spine. Whole head finely reticulate-punctate. Thorax sculptured about like head, the punctation on scutellum and axillae distinctly a little finer than on mesoscutum; postscutellum nearly as long as propodeum on median line and sculptured like scutellum; propodeum with a delicate median carina, usually without lateral folds but occasionally with faint traces of them posteriorly, without spiracular sulci, and with its surface uniformly very indistinctly reticulated, nearly smooth; prepectus more strongly sculptured than rest of pleuron; mesepimeron on upper half perfectly smooth. Forewing extending beyond apex of abdomen, its length to breadth about as 26 to 11; marginal, postmarginal, and stigmal veins about in the proportions of 27, 14, and 10, respectively. Abdomen broadly ovate, about as long as head and thorax combined and approximately one and one-half times as long as broad, the basal four segments practically smooth, those beyond the fourth weakly sculptured; only the apex of ovipositor sheath exposed.

Head and thorax dark green, more or less strongly tinged with coppery below antennae and on scutellum, axillae, and mesepimeron; mandibles yellowish; antennal scape and pedicel greenish black, flagellum brownish black; wings hyaline, the venation pale yellowish with the stigmal knob dark brown; all coxae concolorous with thorax, the anterior and median pairs tinged with coppery; trochanters dark; all femora greenish black with their apices narrowly yellow; front tibia blackish but with a pale-yellowish stripe on outer margin extending from base to apex; middle and posterior tibiae black with a narrow yellowish band at base of each; anterior tarsi wholly dark brown; middle and posterior tarsi with basal joint pale, the three following joints brownish or blackish; abdomen dark metallic green above, but with apex of first and greater part of second, third, and fourth tergites copper colored; ventral side of abdomen nearly black.

*Male*.—Length 1.7 mm. Antennal scape not thickened, four or five times as long as broad; pedicel about one and one-half times as long as broad; ring joint obsolete; first funicular joint a little longer than pedicel and with a long, slender, cylindrical branch originating at its base and reaching very nearly to apex of flagellum; second funicular joint a little longer than first and with a similar branch originating somewhat beyond its base and likewise extend-

ing nearly to apex of flagellum; third joint a little longer than second, with its branch originating about at its middle and attaining to about the same point as the others; all the funicular rami sparsely clothed with long fine hairs; fourth joint of funicle nearly four times as long as broad, thicker toward apex than at base, and without a branch; club 2-jointed, a little thicker and very slightly longer than fourth funicular joint, its apical joint about half as long as the basal one and terminating in a very short spine; abdomen elliptical, about as long as thorax and about twice as long as broad, with its dorsum mostly dark cupreus. Otherwise like the female except less robust.

*Type locality*.—Mount Vernon, Wash.

*Type*.—U.S.N.M. no. 54704.

Described from 20 females (1 holotype) and 21 males (1 allotype) reared from *Ceutorhynchus assimilis* (Payk.) in turnip seed pods July 3, 1937, by A. J. Hanson. A male and a female reared July 17–19, 1937, by H. L. Parker, under European Parasite Laboratory no. 4377 from "Cruciferae pods" from Holland, seem to be this same species but are not considered a part of the type series. Also in the collection are 8 specimens, believed to be this species, from Oakley, Hollister, Roseworth, and Castleford, Idaho, all swept from or collected on *Sophia sophia* and *Sisymbrium altissimum* in June 1937 and in May and June 1931. The specimens collected in 1931 were taken by David E. Fox, but the collector of the earlier specimens is not known.

ENTOMOLOGY.—*Revision of the Nearctic Megophthalminae (Homoptera: Cicadellidae)*.<sup>1</sup> P. W. OMAN, U. S. Bureau of Entomology and Plant Quarantine.

This paper deals with the North American leafhoppers heretofore assigned to the genus *Paropulopa* Fieber. According to the present interpretation none of the seven known species, representing two genera herein described, is congeneric with the European *Paropulopa lineata* Fieber, 1866, genotype of *Paropulopa*.

*Paropulopa lineata* Fieber has no ocelli, the ocellar vestiges being on the crown rather than on the face, whereas in all the North American species of Megophthalminae the ocelli are present and located on the face. This character is sufficient to distinguish the North American forms from *Paropulopa*, and they may be differentiated from *Megophthalmus* Curtis,<sup>2</sup> to which they seem more closely related, by the fact that the carinae replacing the frontal and epicranial sutures are not foliaceously produced. Because these leafhoppers are rather rare in collections and the characters of the subfamily are not well known, the following résumé of the characters common to the North American representatives seems appropriate.

Relatively small, robust leafhoppers (2.5–5 mm in length); color some shade of cinereous, brown, or fuscous; head, including eyes,

<sup>1</sup> Received February 26, 1941.

<sup>2</sup> *Megophthalmus* Curtis, January 1833, genotype (*Megophthalmus bipunctatus* Curtis, 1833) = *Cicada scanica* Fallen, 1806; synonym *Paropia* Germar, March 1833, genotype (*Cicada*) *Ulopa scanica* (Fallen), 1806 (= *Coelidia* ? *scutata* Germar, 1821).